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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/593,539

09/19/2006

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EXAMINER

GALT, CASSI J

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/593,539	Applicant(s) TESHIROGI ET AL.	
	Examiner CASSI GALT	Art Unit 3662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-33 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 21-33 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Puglia (US 6,639,543) in view of the Federal Communications Commission publication FCC 04-285 (FCC) and further in view of Anderson (US 5,146,613).

Regarding claims 21 and 22, Puglia teaches a radar comprising: a transmitting unit (102, 104, 106, 108, 110, 112) which emits pulses (3:39-49), a receiving unit (112, 110, 108, 114, 116, 118) which receives a reflected wave (4:3-6), and a signal processing unit (12:11-14), wherein the transmitting unit has: a pulse generator (104, as per 3:39-42), and a burst oscillator (106) which performs an oscillation for a time corresponding to the width of the pulse signal (3:42-45).

Puglia does not teach:

(1) that the burst oscillator outputs a short pulse signal without causing carrier leakage. However, on page 15 of the Response to Office Action applicant states that "with the structure of the claimed present invention, carrier leakage does not (theoretically) occur since the transmitting unit is configured to control the oscillation

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operation of the burst oscillator by the pulse signal Pa". Puglia teaches the claimed structure, and also teaches controlling the oscillation operation of a burst oscillator using a pulse signal (3:42-45). Examiner therefore asserts that the structure taught by Puglia must likewise operate without carrier leakage.

(2) that the width, cycle, and frequency of the emitted wave are set such that almost an entire main lobe of a spectrum of the emitted wave falls within a range of 24.0 to 29.0 GHz, and that a radiation power density in a prohibited band is lower than a peak radiation power density of the main lobe by not less than 20 dB. However, these operating parameters are mandated by the FCC for vehicular radar (FCC p. 51 (b)(2)). It would have been obvious to modify Puglia by choosing the width, cycle, and frequency of the emitted wave in this way in order to comply with FCC mandates on vehicular radar emissions.

(3) that the entire main lobe of the spectrum of the emitted wave falls within a range of 24.0 to 29.0 GHz. However, it would have been obvious to further modify Puglia such that the entire main lobe of the spectrum of the emitted wave falls within a range of 24.0 to 29.0 GHz in order to ensure compliance with FCC mandates on vehicular radar emissions.

(4) that the burst oscillator comprises the claimed features. However, Anderson teaches a radio transceiver (10) including an oscillator (20) comprising a signal inverter ("inverting amplifier" 22) and a feedback circuit (24) which delays an output signal from the signal inverter to feed back to an input, and a switch circuit (30) which sets the oscillator in an oscillation state only when desired (2:48-53). Anderson teaches that the

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transceiver is inexpensive and has low power consumption because the oscillator is used by both transmit and receive modes and is simple in design (2:56-65). It would have been obvious to further modify Puglia by using such an oscillator in order to achieve low cost and low power consumption.

3. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Puglia (US 6,639,543) in view of the Federal Communications Commission publication FCC 04-285 (FCC) and further in view of Khanna (US 4,733,199).

Regarding claims 23 and 24, Puglia teaches a radar comprising: a transmitting unit (102, 104, 106, 108, 110, 112) which emits pulses (3:39-49), a receiving unit (112, 110, 108, 114, 116, 118) which receives a reflected wave (4:3-6), and a signal processing unit (12:11-14), wherein the transmitting unit has: a pulse generator (104, as per 3:39-42), and a burst oscillator (106) which performs an oscillation for a time corresponding to the width of the pulse signal (3:42-45).

Puglia does not teach:

(1) that the burst oscillator outputs a short pulse signal without causing carrier leakage. However, on page 15 of the Response to Office Action applicant states that “with the structure of the claimed present invention, carrier leakage does not (theoretically) occur since the transmitting unit is configured to control the oscillation operation of the burst oscillator by the pulse signal Pa”. Puglia teaches the claimed structure, and also teaches controlling the oscillation operation of a burst oscillator using

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a pulse signal (3:42-45). Examiner therefore asserts that the structure taught by Puglia must likewise operate without carrier leakage.

(2) that the width, cycle, and frequency of the emitted wave are set such that almost an entire main lobe of a spectrum of the emitted wave falls within a range of 24.0 to 29.0 GHz, and that a radiation power density in a prohibited band is lower than a peak radiation power density of the main lobe by not less than 20 dB. However, these operating parameters are mandated by the FCC for vehicular radar (FCC p. 51 (b)(2)). It would have been obvious to modify Puglia by choosing the width, cycle, and frequency of the emitted wave in this way in order to comply with FCC mandates on vehicular radar emissions.

(3) that the entire main lobe of the spectrum of the emitted wave falls within a range of 24.0 to 29.0 GHz. However, it would have been obvious to further modify Puglia such that the entire main lobe of the spectrum of the emitted wave falls within a range of 24.0 to 29.0 GHz in order to ensure compliance with FCC mandates on vehicular radar emissions.

(4) that the burst oscillator comprises the claimed features. However, Khanna teaches a microwave frequency oscillator (100, ab. 2-3) comprising an amplifier (102), a resonator (134) connected to an output of the amplifier, and a feedback circuit (128) which performs positive feedback from an output side of the amplifier to an input side. Khanna also teaches a switch circuit (114) which sets the oscillator in an oscillation state only when desired, avoiding spurious frequencies in the output signal (2:55-60)

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attributed to leakage (1:67-2:2). It would have been obvious to further modify Puglia by using such an oscillator in order to avoid spurious frequencies in the output signal.

4. Claims 25-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Puglia (US 6,639,543) in view of the Federal Communications Commission publication FCC 04-285 (FCC), Khanna (US 4,733,199) or Anderson (US 5,146,613), and Panasik (US 6,668,008).

Regarding claims 25-28, Puglia does not teach that the transmitting unit has a filter that suppresses frequencies from 23.6 – 24.0 GHz (the FCC prohibited radio astronomy or exploration satellite service band). However, Panasik teaches that it is conventional to use filters to suppress frequencies that may interfere with other users of a frequency band (1:46-55, esp. 54-55). It would have been obvious to further modify Puglia by using a filter to suppress frequencies from 23.6 - 24.0 GHz in order to comply with the FCC prohibition on transmission in the 23.6 – 24.0 GHz band.

Regarding claims 29-33, Puglia does not teach that the antenna element is surrounded by a cavity with a resonant frequency in the range 23.6 to 24.0 GHz (the FCC prohibited radio astronomy or exploration satellite service band). However, Panasik teaches that it is conventional to use filters to suppress frequencies that may interfere with other users of a frequency band (1:46-55, esp. 54-55), and it is well known that a cavity surrounding an antenna element acts as a filter. It would have been

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obvious to further modify Puglia by surrounding the antenna element with a cavity with a resonant frequency in the range 23.6 to 24.0 GHz in order to comply with the FCC prohibition on transmission in the 23.6 – 24.0 GHz band.

Response to Arguments

5. Applicant's arguments filed 10/20/2008 have been fully considered but they are not persuasive.

Regarding applicant's argument that none of the cited prior art references discloses or suggests a transmitting unit having a burst oscillator which receives a pulse signal output from a pulse generator and performs an oscillation operation for a time corresponding to the width of the pulse signal to output a short pulse signal without causing carrier leakage, examiner respectfully disagrees. As described in the rejection of claims 21-24 above, Puglia (US 6,639,543) teaches a transmitting unit having a pulse generator (104, as per 3:39-42) and a burst oscillator (106) which performs an oscillation for a time corresponding to the width of the pulse signal (3:42-45). Further, on page 15 of the Response to Office Action applicant states that "with the structure of the claimed present invention, carrier leakage does not (theoretically) occur since the transmitting unit is configured to control the oscillation operation of the burst oscillator by the pulse signal Pa". Puglia teaches the claimed structure, and also teaches controlling the oscillation operation of a burst oscillator using a pulse signal (3:42-45).

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Examiner therefore asserts that the structure taught by Puglia must likewise operate without carrier leakage.

Regarding applicant's argument that the cited prior art references do not disclose or suggest a burst oscillator which comprises an amplifier, a resonator, a feedback circuit, and a switch circuit cooperating in the manner claimed, examiner again respectfully disagrees. As described in the rejection of claims 23 and 24 above, Khanna (US 4,733,199) teaches such an oscillator.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CASSI GALT whose telephone number is (571)270-1469. The examiner can normally be reached on Mon-Fri 7:30AM-5:00PM, Alt. Fri, Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on 571-272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Examiner, Art Unit 3662+

/Thomas H. Tarcza/
Supervisory Patent Examiner, Art Unit 3662